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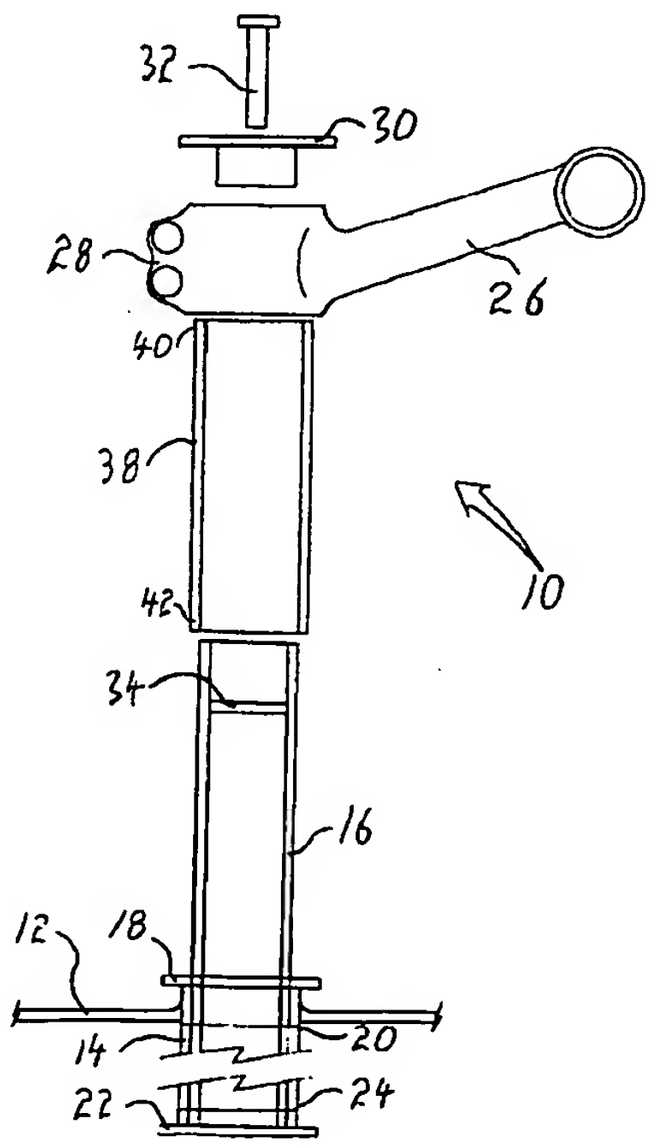
(54) Titre : METHODE DE REGLAGE DE LA POTENCE SUR LE TUBE DE DIRECTION NON FILETE D'UNE BICYCLETTE, ET TUBE DE DIRECTION NON FILETE

(54) Title: METHOD OF HANDLEBAR STEM ADJUSTABILITY ON THREADLESS STEERING TUBE BICYCLE STEERING ASSEMBLY AND A THREADLESS STEERING TUBE BICYCLE STEERING ASSEMBLY



(57) Abrégé/Abstract:
A method of handlebar stem adjustability on a threadless steering tube bicycle steering assembly and a threadless steering tul bicycle steering assembly. A first step involves providing a cylindrical bushing having a first end, a second end, and a longitudir slit which extends between the first end and the second end. A second step involves positioning the cylindrical bushing overlying steering tube in close fitting relation and extending for length equal to a length by which the steering tube extends past an upp bearing. A third step involves tightening a top cap onto the steering tube to clamp down upon the cylindrical bushing to produ compression on the upper bearing. A fourth step involves clamping a stem clamp of a handle bar stem onto the cylindrical bushir thereby causing the cylindrical bushing to frictionally engage the steering tube.

ABSTRACT OF THE DISCLOSURE

A method of handlebar stem adjustability on a threadless steering tube bicycle steering assembly and a threadless steering tube bicycle steering assembly. A first step involves providing a cylindrical bushing having a first end, a second end, and a longitudinal slit which extends between the first end and the second end. A second step involves positioning the cylindrical bushing overlying a steering tube in close fitting relation and extending for length equal to a length by which the steering tube extends past an upper bearing. A third step involves tightening a top cap onto the steering tube to clamp down upon the cylindrical bushing to produce compression on the upper bearing. A fourth step involves clamping a stem clamp of a handle bar stem onto the cylindrical bushing, thereby causing the cylindrical bushing to frictionally engage the steering tube.

TITLE OF THE INVENTION:

Method of handlebar stem adjustability on threadless steering tube bicycle steering assembly and a threadless steering tube bicycle steering assembly

FIELD OF THE INVENTION

The present invention relates to a method of handlebar stem adjustability on a threadless steering tube bicycle steering assembly and a threadless steering tube bicycle steering assembly constructed in accordance with the teachings of the method.

BACKGROUND OF THE INVENTION

Most bicycle steering assemblies use threadless steering tubes. The threadless steering tube forms part of the front forks of the bicycle and is adapted to pass through a head tube of a bicycle frame. Bearings are positioned on the upper end and the lower end of the bicycle frame's head tube allowing the forks steering tube to rotate within the head tube. A handle bar stem clamps with a stem clamp directly onto the steering tube. Spacers are added or removed to adjust the height of the handle bar stem. A top cap tightens onto the steering tube to force the stem clamp down upon the spacers to produce compression on the upper and lower bearings. Should a height adjustment of the handle bar stem be desired, the handle bar stem is removed and spacers are added or removed.

SUMMARY OF THE INVENTION

What is required is an alternative method of handlebar stem adjustability on a threadless steering tube bicycle steering assembly and a threadless steering tube bicycle steering assembly constructed in accordance with the teachings of the method.

According to a first aspect of the present invention there is provided a method of handlebar stem adjustability on a threadless steering tube bicycle steering assembly. A first step involves providing a cylindrical bushing having a first end, a second end, and a longitudinal slit which extends between the first end and the second end. A second step involves positioning the cylindrical bushing overlying a steering tube in close fitting relation and extending for length equal to a length by which the steering tube extends past an upper bearing. A third step involves tightening a top cap onto the steering tube to clamp down upon the cylindrical bushing to produce compression on the upper bearing. A fourth step involves clamping a stem clamp of a handle bar stem onto the cylindrical bushing, thereby causing the cylindrical bushing to frictionally engage the steering tube.

According to another aspect of the present invention there is provided a threadless steering tube bicycle steering assembly which includes a bicycle frame having a head tube. A threadless steering tube extends upwardly from front forks and passes through the head tube of the bicycle frame. An upper bearing is positioned on an upper end of the head tube. A lower bearing is positioned at a lower end of the head tube. The upper bearing and the lower bearing permit the steering tube to rotate within the head tube. A cylindrical bushing is provided having a first end, a second end, and a longitudinal slit which extends between the first end and the second end. The cylindrical bushing overlies the steering tube in close fitting relation extending for length equal to a length by which the steering tube extends past the upper bearing. A top cap is tightened onto the

steering tube to clamp down upon the cylindrical bushing to produce compression on the upper and lower bearings. A handle bar stem with a stem clamp is clamped onto the cylindrical bushing, thereby causing the cylindrical bushing to frictionally engage the steering tube.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings, the drawings are for the purpose of illustration only and are not intended to in any way limit the scope of the invention to the particular embodiment or embodiments shown, wherein:

FIGURE 1 is a an exploded side elevation view of a threadless steering tube bicycle steering assembly constructed in accordance with the teachings of the present invention.

FIGURE 2 is a side elevation view, in section, of the bicycle steering assembly illustrated in **FIGURE 1**, with the stem clamp of the handlebar stem clamped in a first position.

FIGURE 3 is a side elevation view, in section of the bicycle steering assembly illustrated in **FIGURE 1**, with the stem clamp of the handlebar stem clamped in a second position.

FIGURE 4 is a side elevation view of the bicycle steering assembly illustrated in **FIGURE 3**.

FIGURE 5 labelled as **PRIOR ART** is an exploded side elevation view of a threadless steering tube bicycle steering assembly.

FIGURE 6 is a side elevation view, in section, of the bicycle steering assembly illustrated in **FIGURE 5**.

FIGURE 7 is a side elevation view of the bicycle steering assembly illustrated in **FIGURE 6**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment, a threadless steering tube bicycle steering assembly generally identified by reference numeral 10, will now be described with reference to **FIGURES 1** through **4**.

Referring to **FIGURES 5** through **7**, a **PRIOR ART** threadless steering tube bicycle steering assembly will first be described for purposes of comparison. Referring to **FIGURE 5**, a prior art bicycle assembly has a bicycle frame 12 adapted with a head tube 14. A threadless steering tube 16 extends upwardly from the front forks of a bicycle (not shown) and passes through head tube 14. An upper bearing 18 is positioned at an upper end 20 of head tube 14 and a lower bearing 22 is positioned at a lower end 24 of head tube 14 such that steering tube 16 rotates within head tube 14. A handle bar stem 26 with a stem clamp 28 overlies steering tube 16. Referring to **FIGURE 6**, handle bar stem 26 is retained by a top cap 30 that is fastened with a bolt 32 which has means for attachment to a bulkhead 34. Referring to **FIGURE 7**, a plurality of spacers 36 overly steering tube 16 in close fitting relation and, cumulatively, extend for a length equal to a length by which steering tube 16 extends past upper bearing 18 minus a length equal to handle bar stem 26.

Structure and Relationship of Parts:

Referring to **FIGURE 1**, bicycle steering assembly 10 includes a bicycle frame 12 adapted with a head tube 14. A threadless steering tube 16 extends upwardly from the front forks of a bicycle (not shown) and passes through head tube 14. An upper bearing 18 is positioned at an upper end 20 of head tube 14 and a lower bearing 22 is positioned at a lower end 24 of head tube 14 such that steering tube 16 rotates

within head tube 14. A handle bar stem 26 with a stem clamp 28 overlies steering tube 16. Referring to **FIGURE 2**, handle bar stem 26 is retained by a top cap 30 that is fastened with a bolt 32 which has means for attachment to a bulkhead 34. Referring to **FIGURE 1**, according to the teachings of the present invention, bicycle steering assembly 10 has a cylindrical split sleeve bushing 38 having a first end 40 and a second end 42. Referring to **FIGURES 2** and **3**, cylindrical split sleeve bushing 38 overlies steering tube 16 in close fitting relation and extends for a length equal to a length by which steering tube 16 extends past upper bearing 18. Referring to **FIGURE 4**, cylindrical split sleeve bushing 38 is further adapted with a longitudinal slit 44 which extends between first end 40 and second end 42.

Operation:

The use and operation of a threadless steering tube bicycle steering assembly 10 will now be described with reference to **FIGURES 1** through **4**. Referring to **FIGURE 1**, cylindrical bushing 38 having a first end 40, a second end 42 and a longitudinal slit 44 is provided such that it extends for a length equal to a length by which steering tube 16 extends past upper bearing 18. Referring to **FIGURE 2**, cylindrical bushing 38 may then be positioned over steering tube 16 and, in turn, handle bar stem 26 may be positioned over cylindrical bushing 38. Top cap 30 may then be tightened with bolt 32 fastening to bulkhead 34, clamping down upon cylindrical bushing 38 to produce compression on upper bearing 18. Referring to **FIGURE 4**, stem clamp 28 may then be tightened. Longitudinal slit 44 allows the tightening of stem clamp 28 to slightly collapse cylindrical bushing 38 and exert compressive pressure on steering tube 16, frictionally engaging steering tube 16 and unifying the entire assembly from handle bars to forks and wheel.

Referring to **FIGURE** 3, should the need arise to change from a first position, the adjustment of handle bar stem 26 is infinite and easily accomplished by loosening stem clamp 28 and re-tightening it to a second position as shown.

Advantages:

It will be apparent to one skilled in the art the numerous advantages provided by the above described threadless steering tube bicycle steering assembly. Adjustments may be made without removing the handle bar stem from the steering tube. This permits more rapid adjustment. The need for numerous spacers is eliminated. This avoids problems occurring with lost spacers or not having the correct number or thickness of spacers for the desired adjustment. This permits finite adjustment, as opposed to the use of spacers in which adjustability is determined by the spacers used, all of which have a fixed thickness. Adjustments may be made without having to readjust the bearings. As the use of spacers were part of the bearing compression process, one could not add or remove spacers without changing bearing compression. In contrast, with the present invention the alteration of the positioning of the stem clamp along the steering tube is independent of bearing compression, which is performed by the Cylindrical sleeve without regard to the positioning of the stem clamp. The stem clamp has been taken out of the bearing compression process.

In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article "a" does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be one and only one of the elements.

It will be apparent to one skilled in the art that modifications may be made to the illustrated embodiment without departing from the spirit and scope of the invention as hereinafter defined in the Claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of handlebar stem adjustability on a threadless steering tube bicycle steering assembly, comprising the steps of:

providing a cylindrical bushing having a first end, a second end, and a longitudinal slit which extends between the first end and the second end;

positioning the cylindrical bushing overlying a steering tube in close fitting relation and extending for length equal to a length by which the steering tube extends past an upper bearing;

tightening a top cap onto the steering tube to clamp down upon the cylindrical bushing to produce compression on the upper bearing; and

clamping a stem clamp of a handle bar stem onto the cylindrical bushing, thereby causing the cylindrical bushing to frictionally engage the steering tube.

2. A threadless steering tube bicycle steering assembly, comprising:

a bicycle frame having a head tube;

a threadless steering tube extending upwardly from front forks and passing through the head tube of the bicycle frame;

an upper bearing positioned on an upper end of the head tube;

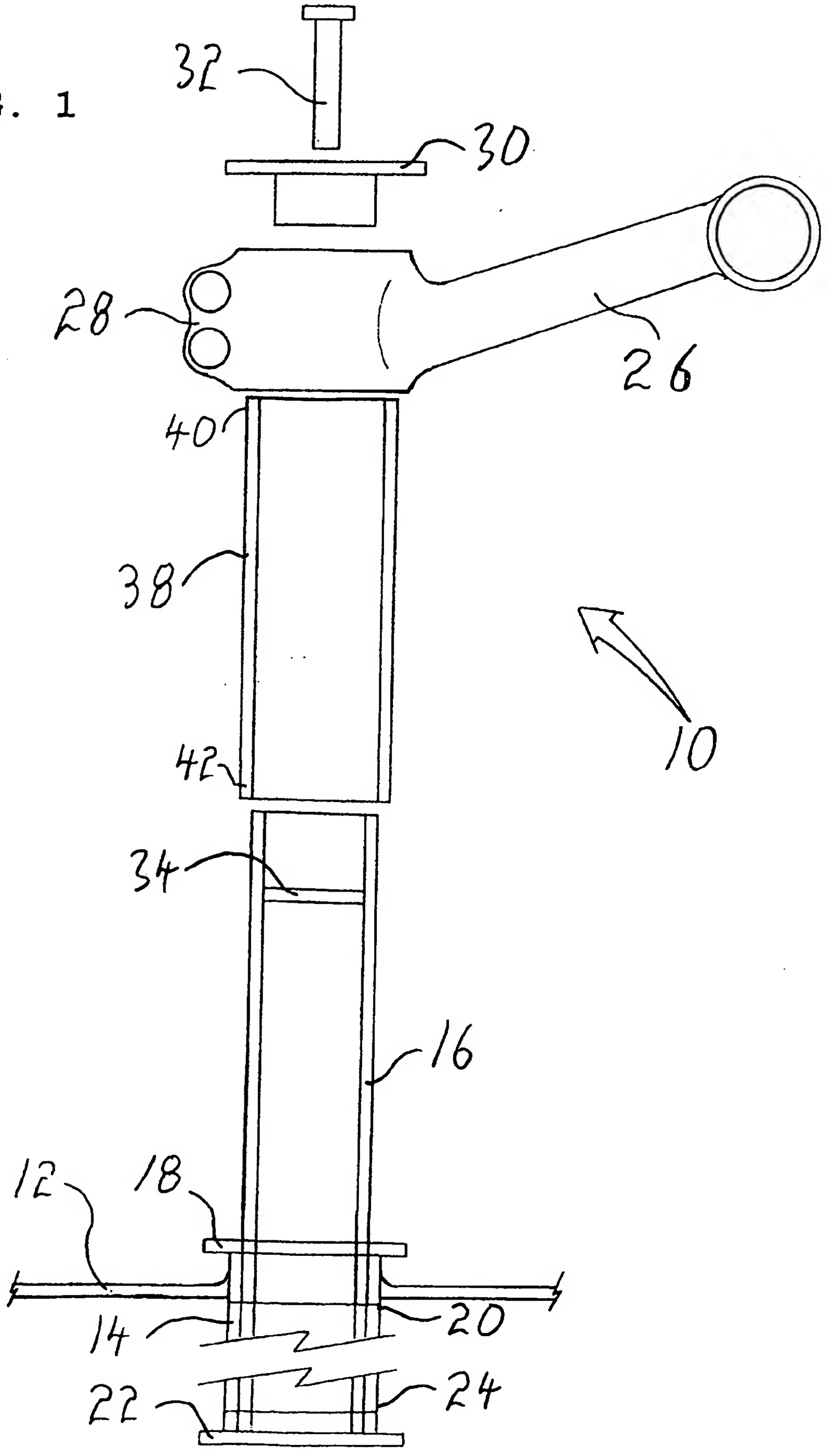
a lower bearing positioned at a lower end of the head tube, the upper bearing and the lower bearing permitting the steering tube to rotate within the head tube;

a cylindrical bushing having a first end, a second end, and a longitudinal slit which extends between the first end and the second end, the cylindrical bushing overlying the steering tube in close fitting relation and extending for length equal to a length by which the steering tube extends past the upper bearing;

a top cap tightened onto the steering tube to clamp down upon the cylindrical bushing to produce compression on the upper and lower bearings; and

a handle bar stem with a stem clamp clamped onto the cylindrical bushing, thereby causing the cylindrical bushing to frictionally engage the steering tube.

FIG. 1



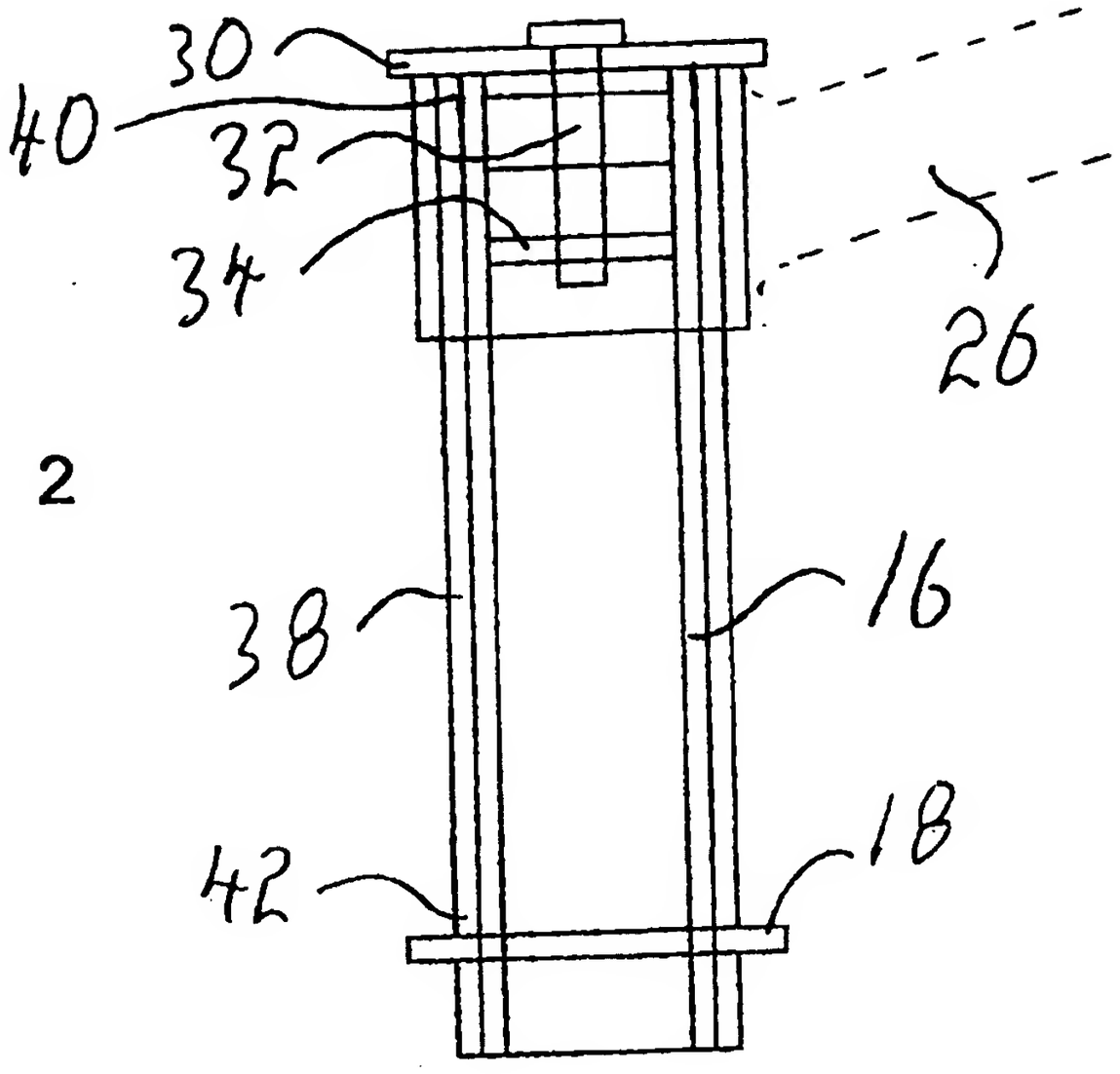
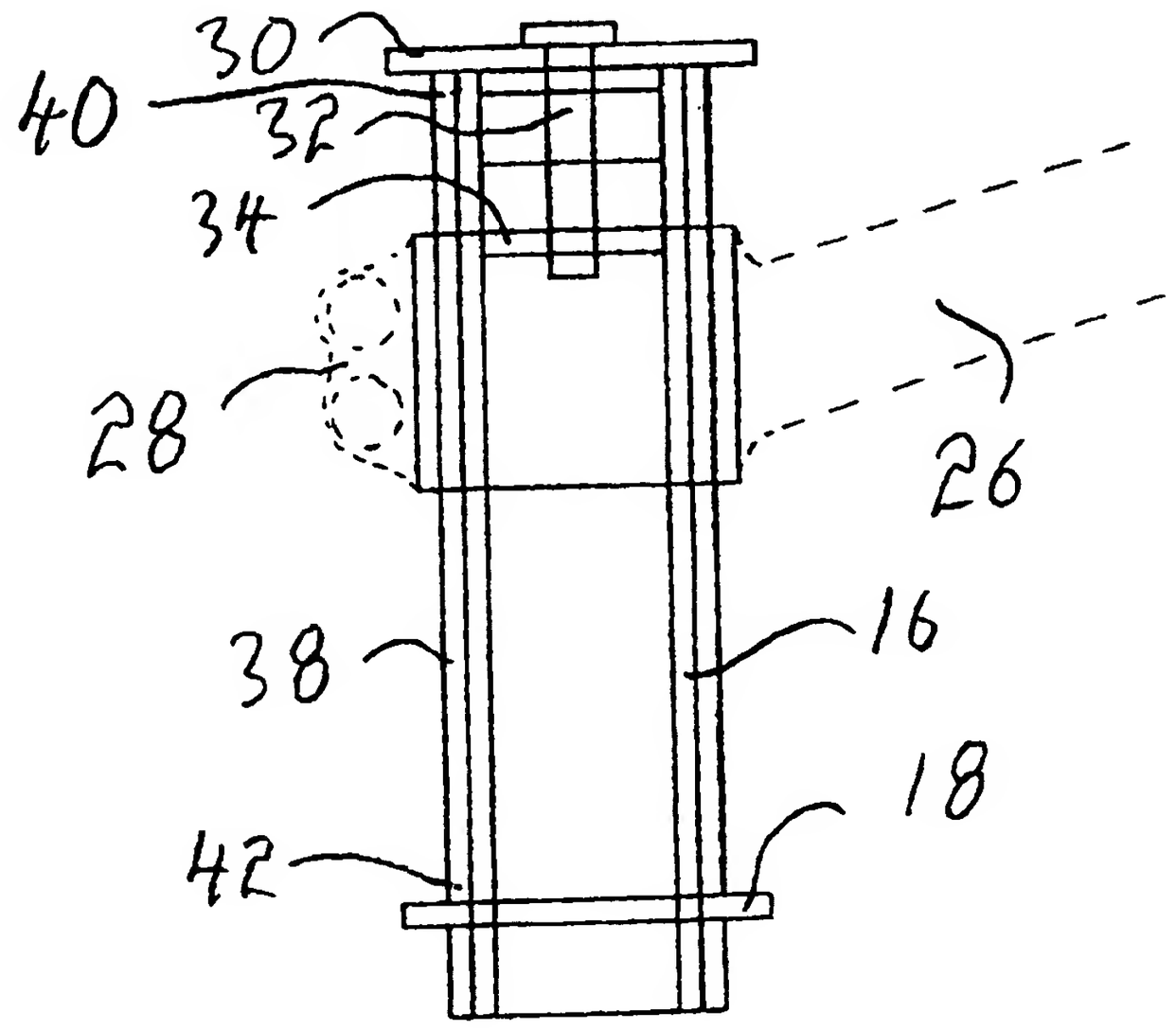


FIG. 2

FIG. 3



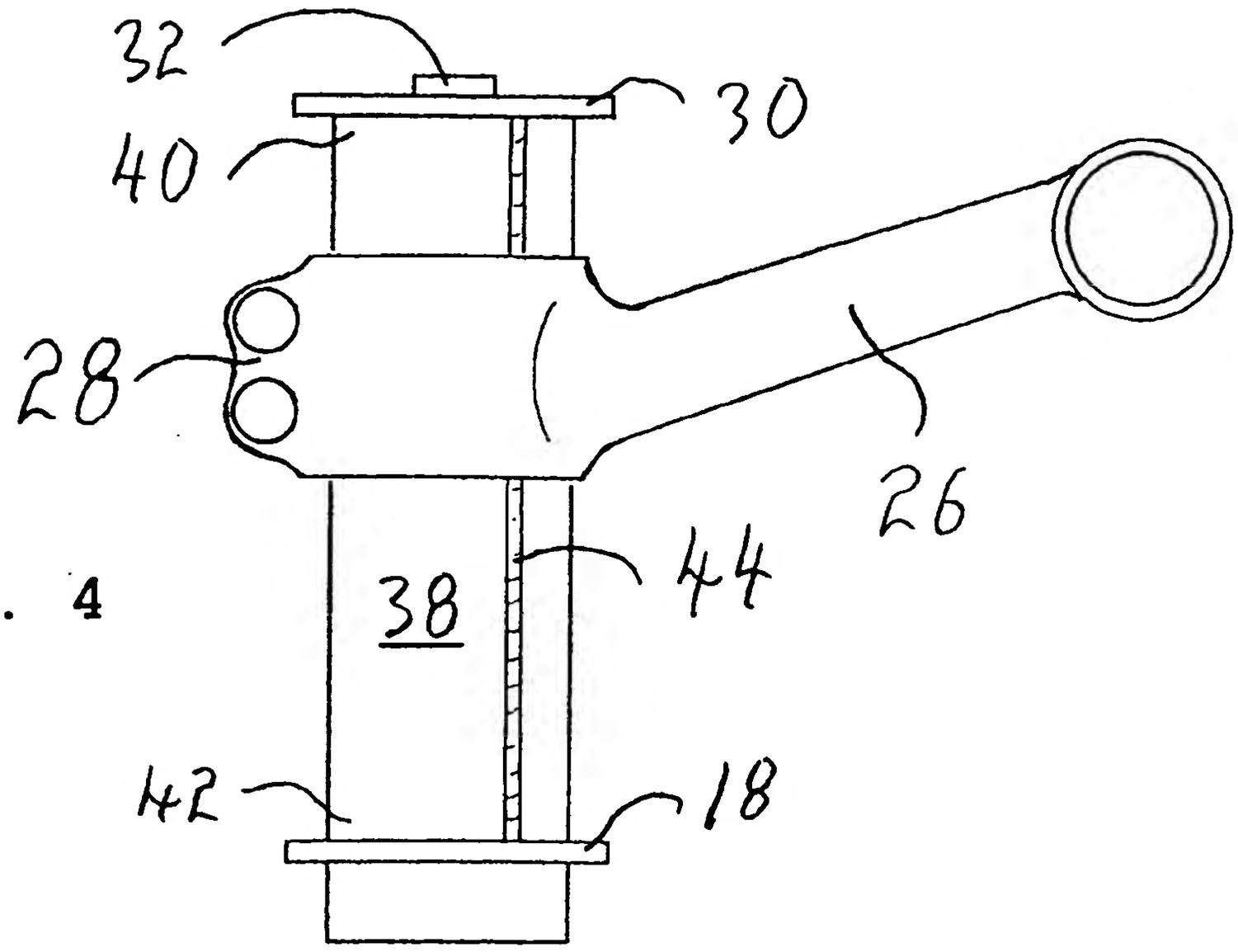


FIG. 4

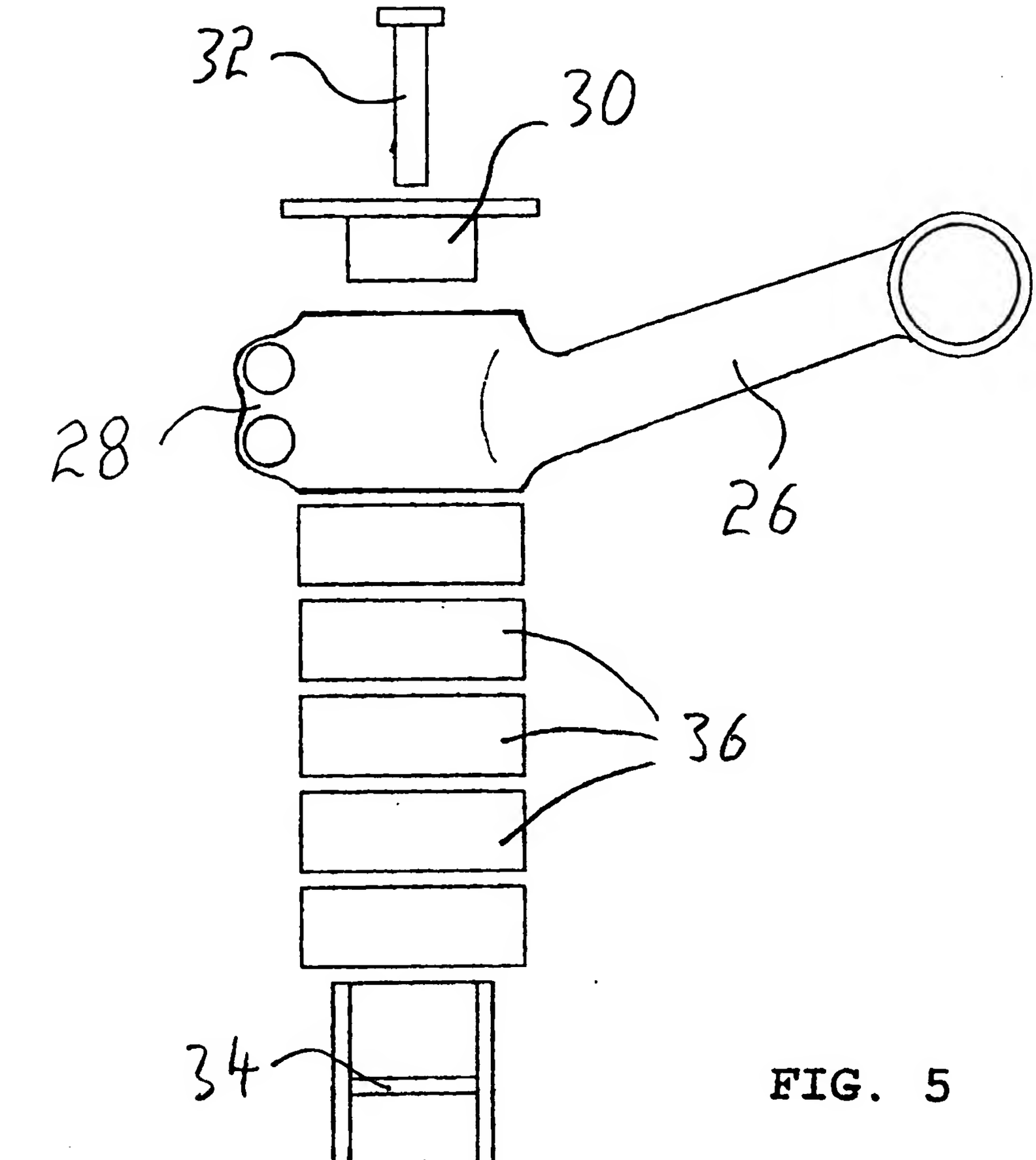


FIG. 5

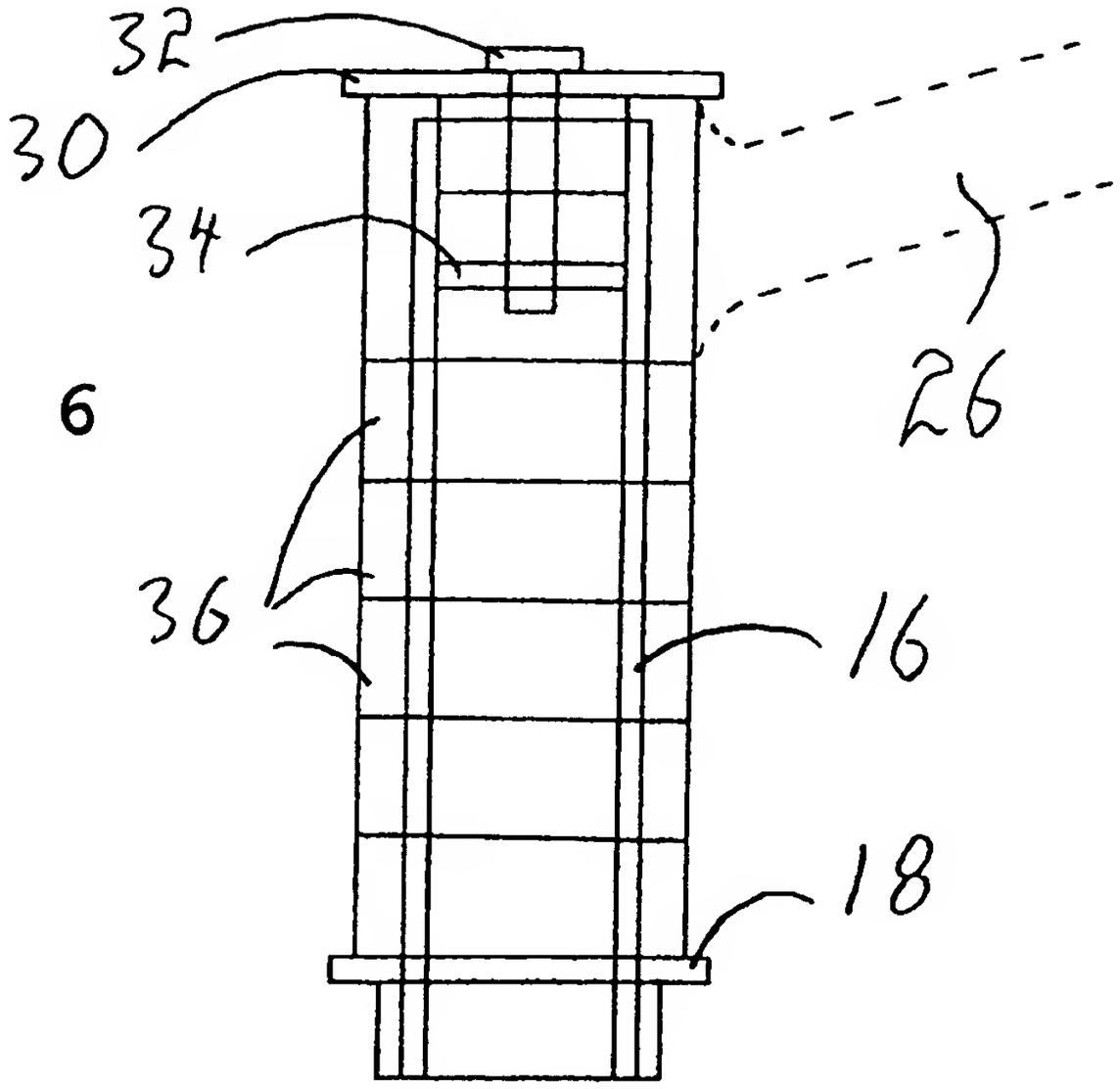


FIG. 6

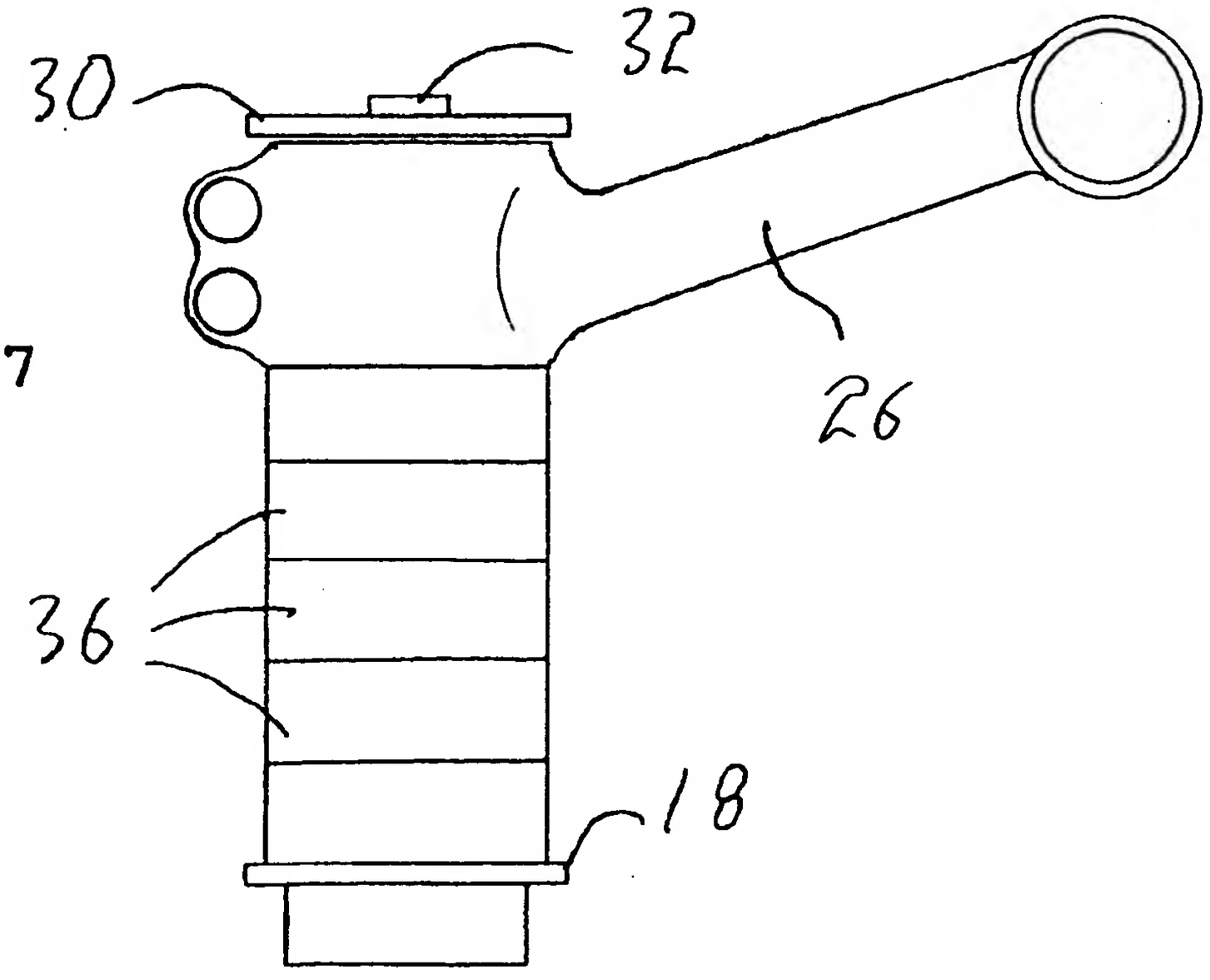
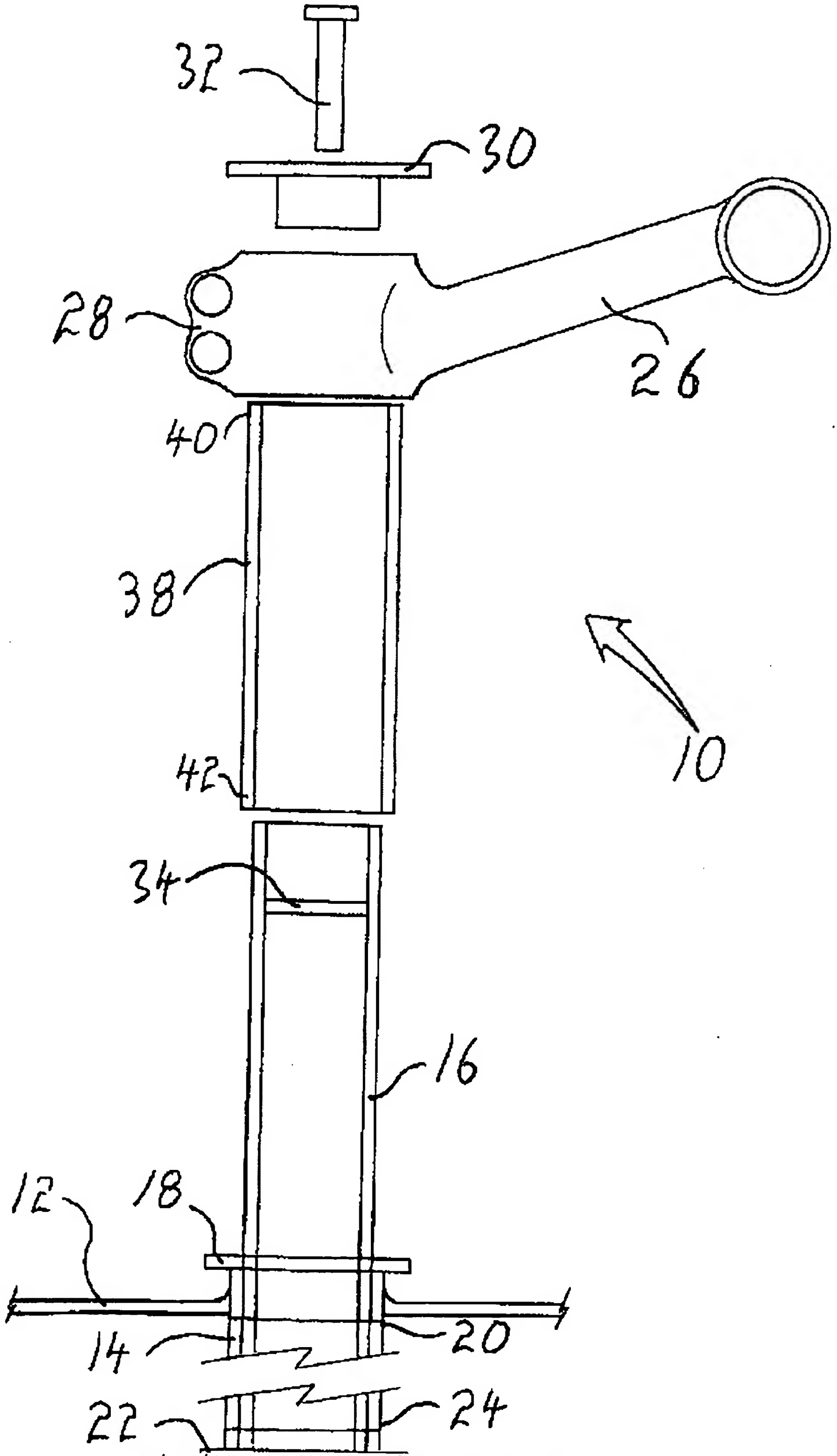


FIG. 7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